OUR AMERICAN LAND

The Story of Its Abuse and Its Conservation

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Miscellaneous Publication No. 596
U. S. DEPARTMENT OF AGRICULTURE
Soil Conservation Service

The soil—which all of us, city and country people alike, live from—is our Nation's most important resource. Industry and labor, and professional people, as well as farmers, have a large stake in the country's land. Today they are all rightly concerned about America's productive soil and water resources; they realize as never before that these basic resources are linked directly to the United States future prosperity. These same resources also have a real bearing on the future of civilization. Food—which comes from the soil—was an important weapon in the war and it is important in the peace.

Land, therefore, is our base; for everything we do, all we share, even whatever we amount to as a great people, begins with and rests on the sustained productivity of our agricultural lands.

Here are some facts and figures about soil and water in the United States, and their wise use and conservation.

OUR AMERICAN LAND

THE STORY OF ITS ABUSE AND ITS CONSERVATION

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THE PROBLEM OF EROSION

What is erosion?

Soil is not permanent. Under many conditions it is extremely unstable. When wind or water moves across bare earth they usually carry some soil with them. They may move it hundreds of miles or only a short distance, but eventually they carry away large amounts of soil, unless it is tied down.

Dense plant growth helps to slow down this soil movement. This gives nature time to replace what little soil is removed by erosion. Nature does this by constantly forming new topsoil from underlying subsoil and rock. This slow process, known as "natural erosion" or "geologic erosion," goes on unnoticed over hundreds of years. This type is not dangerous usually; it may be beneficial to man and the earth. Many fine agricultural areas have been formed in this way.

But where land is cultivated or left bare, another and faster kind of erosion occurs. This is accelerated erosion, and it is caused by man's carelessness. When land is cultivated there is no dense growth of plants to protect the soil, and erosion may be a thousand times faster than on protected land. Accelerated erosion damages grasslands when the grass is thinned out by overgrazing. It damages woodlands left bare by overcutting, overgrazing, and burning. This is what we now know as soil erosion, and unless it is checked, it may ruin most of our good land.

What has happened to our land?

Man seems to have a habit of wasting the gifts of nature. Nowhere has our waste been greater, however, than in our misuse of land. A survey made in 1934 indicated that we had let erosion badly damage or ruin about 282 million acres of the country's crop and grazing land. Another 775 million acres of our crop, grazing, forest, and other kinds of land had eroded to some extent. This is tragic, because so many farm families have lost the means of earning a living. It is tragic because productive land is the basic resource from which future generations must live. Generally the worst erosion has taken place on the farm lands of southern United States, where erosion goes on at all seasons. Much of the topsoil has been removed from large areas across the Nation and the less productive subsoil is being farmed in many places.

How fast is our land being damaged?

Today the Corn Belt is one of the larger areas being rapidly damaged. Throughout the country about 110 million acres of cropland, on farms that cover around 260 million acres, are now being damaged at a critically severe rate. This means that yields from about a fourth of the land now used for crops will be considerably lower within 10 or 12 years, if present farming methods are continued. But prompt action can prevent most of this potential damage.

Another fourth of the land now used for crops is eroding at a less rapid but still serious rate. The present productive level of this land will decline within 15 to 30 years unless it is farmed with effective conservation methods.

Present erosion damage to the remaining half of our land now in crops is going on at rates much less serious. This does not mean that the land is producing all it can. Better farming methods, in fact, would increase production on much of it.

We are too close to the danger line

We can get along from now on with the good land we have left, *but we can't keep our present standard of living if we lose much more.* We now have around

460 million acres of good cropland in the United States. This includes, besides that now in crops, about 85 million acres that need clearing, drainage, irrigation, or other improvements. That's all we have. And all but about 95 million of this 460 million acres is subject to erosion if it's not protected.

So *we have no more land to lose.* Actually we need more good land for crops now. Too many farmers are working poor land that should be turned back to grass or woodland. *More waste of good land would amount to a national crime* on the part of those who are responsible—meaning ourselves.

Yet we are allowing about 500,000 acres to go down to ruin each year!

If a foreign nation should invade this country, every man, woman, and child would immediately rise to the defense of our land. We would throw the enemy out regardless of cost. NOW WE HAVE GONE TO WAR AGAINST EROSION.

PRODUCTIVE LAND

What is productive land?

Land means different things to different people. A sailor may say that land is that part of the world not covered with water. Some geographers agree. So does Webster, who says land is "The solid part of the surface of the earth, as distinguished from water . . . especially from oceans and seas." By this standard, something like 28 percent of the earth's surface is land.

Soil conservationists, however, take a different view as to land. They are concerned with it because it is the source of the food and fiber crops we need. Soil conservationists must consider not only the land itself, but other things: soil types, slopes, fertility, rainfall, and temperature. Their job is to protect the land from erosion and exhaustion according to its needs, and see that it is used according to its capability to grow things.

Most land produces things of value to man. It may be cotton or corn, pasture, timber, or wildlife. Whatever it produces, if we use it according to capability and protect it according to need, we maintain its productiveness.

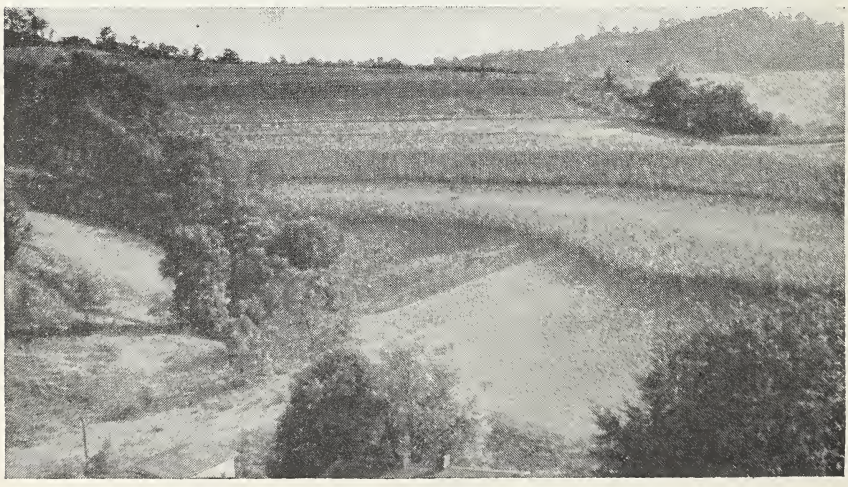
Where the slope of fields is steeper than 8, 10, or 12 percent, the conservationist knows that the land is not safe for regular plowing. Trees and grass are better crops for land of this sort because they hold the soil in place. In regions of heavy rainfall, terraces to control run-off are built more sturdily than in areas of gentle rains. If yields drop off, the conservationist uses manure, lime, soil-building legumes, rotations, and fertilizer to restore life to the soil. He plants raw gullies to grass, trees, or vines; or, if these will not grow well, he may use small dams or other mechanical measures to stop soil washing.

This is TREATING LAND ACCORDING TO ITS NEEDS AND USING IT ACCORDING TO ITS CAPABILITY.

SOIL CONSERVATION

What is soil conservation?

Soil conservation is proper use and care of the land. It means using the land to produce the greatest amounts of the things most needed, and at the same time protecting it so it will not lose its productiveness. The conservation measures used are being constantly improved by careful research at soil conservation experiment stations throughout the country, to meet different soil problems. All land is not alike. Each field or acre must be used for things it is best suited to produce, and protected according to its needs.



All measures that help keep the land productive are tools of conservation. Terraces, contouring, organic matter, grass, crop rotations, fertilizer, legumes, shrubs, trees, drainage if the land is too wet, and irrigation if it is too dry—all of them are conservation tools. It is conservation whether the practices are used separately or together. In other words, soil conservation includes any and all measures that will make the land produce more without damaging it.

Some of the soil troubles that conservation helps prevent are:

1. Topsoil washing or blowing away.
2. Covering good land with erosion debris.
3. Exhaustion of plant food in the soil by overcropping and leaching.
4. Accumulation of toxic salts.
5. Too much water—wet lands.
6. Lack of water—dry lands.
7. Burning of organic soils (peat land).
8. Improper cultivation.

The basis of soil conservation is wise use and proper management of all land.

How do you conserve soil?

There are many things you can do:

1. Use suitable erosion-control practices to stop soil washing and blowing.
2. Hold the rain that falls on the land, for use of crops, trees, grass, livestock, and for other purposes. You may want to hold it where it falls, or divert it to other fields or disposal areas, or store it in ponds.

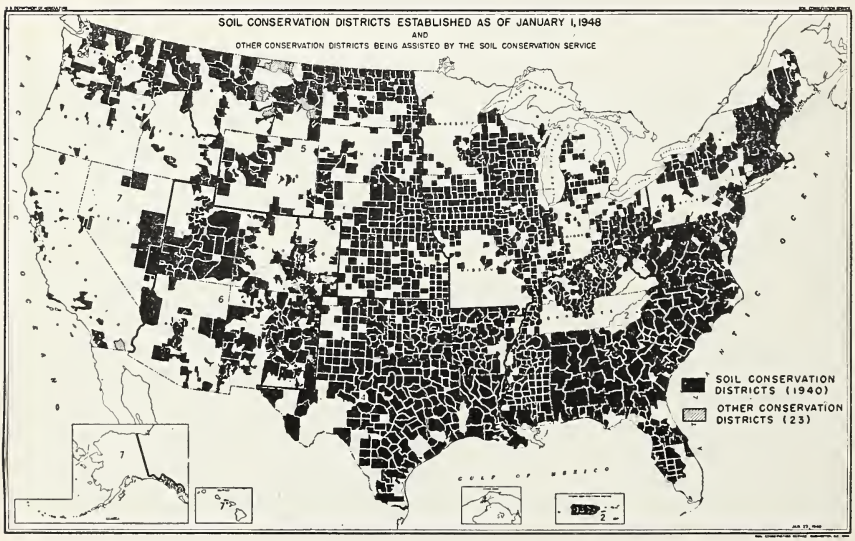
3. Use manure, fertilizer, and lime where needed, in the right amounts and at the right time.
4. Use tillage, mulching, and cropping practices to protect your land and save rainfall.
5. Drain waterlogged fields.
6. Plant trees, grass, or legumes on areas too steep or shallow to plow; also on land too poor to grow field crops.
7. Quit growing clean-tilled crops on land that washes or blows easily.
8. Flood fields where toxic salts have accumulated, to leach out the salts.
9. Protect organic soils (peat land) from fire by flooding, or by raising the water table.
10. Where it is available, open up new land under conservation practices when needed to increase cropland.
11. Increase feed crops in safe grazing areas to eliminate overgrazing when grass is thin and short.

These, and other sound farming and ranching practices that protect the land and increase production, are the tools of soil conservation.

SOIL CONSERVATION IS THE SCIENTIFIC USE OF LAND.

SOIL CONSERVATION DISTRICTS

Soil conservation districts are local units of government, operating under State laws. They are set up and run by farmers to protect farm and ranch lands from erosion, conserve rainfall, and improve productivity. They have the authority to ask and receive help from State and Federal Governments.



The first of these districts—Brown Creek Soil Conservation District in Anson County, N. C.—was organized August 4, 1937.

By January 1948 all 48 States had passed district laws, and 1,921 districts had been set up. They include 1,042,000,000 acres and 4,300,000 farms.

In these self-governed districts farmers are cooperating to protect their lands. The work of each farmer on his own farm fits into a district-wide plan. They often work in groups, helping each other to apply good land use and conservation methods to their lands. Teamwork is the key to the success of soil conservation districts. It speeds up the work.

The Soil Conservation Service, and other Federal and State units, furnish technical, educational, and other aid to the districts.

WHAT SOIL CONSERVATION DISTRICTS ARE DOING

By December 31, 1947, soil conservation districts had made cooperative agreements with more than 530,000 farmers, covering 148 million acres. In each case the farmer agreed to use conservation farming on all of his land. The district agreed to furnish technical aid, and in some cases machinery, seeds, and other help. A conservation plan, based on the needs and capacities of the land, and the means of the farmer, was made for each farm. The Soil Conservation Service did the technical planning for these farms and helped apply the plans to the land. Various other agencies assisted in other ways.

Work has been completed on 76,000,000 acres of this land. In 1942 soil conservation practices were applied through soil conservation districts to 7,943,000 acres. During the year following 9,805,000 acres were similarly treated; in 1944, 10,156,000 acres; in 1945, 13,012,000 acres; in 1946 19,332,928 acres; and in 1947, 21,650,526 acres. In all, a total of 112,000,000 acres has been treated.

The conservation farm plans are very thorough. They provide for use of each field or other area according to its capability and treatment of each acre according to its needs. In some cases it takes several years to install all the conservation work needed. Hence, the complete treatment lags behind the total acreage planned. For example: A farm plan may call for terraces and contour cultivation on 50 acres. The farmer may be able to complete terraces on only 10 acres each year. In the meantime he uses contour cultivation in the other fields. The treatment is not complete, however, until the terraces have been built, which in this case would take 5 years.

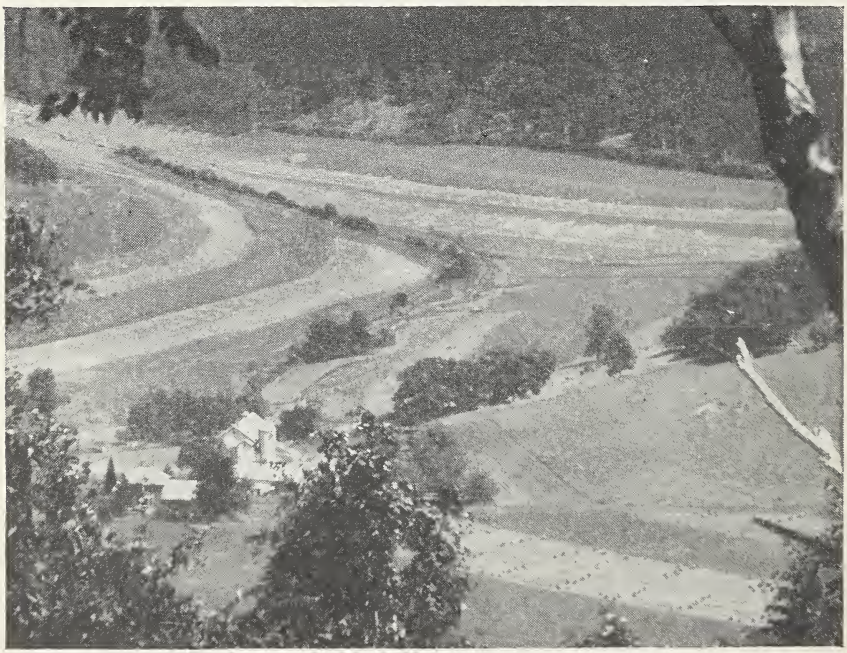
Many different conservation measures are used. Each piece of land is different and needs different practices. Some fields need only one or two practices, while

others need several. The figures below show various practices that have been planned and actually carried out in soil conservation districts:

Conservation measures	Planned	Applied to the land
Terracing.....miles..	1,166,315	477,872
Strip cropping.....acres..	6,598,022	3,815,734
Contour cultivation.....acres..	23,540,186	14,381,186
Cover crops.....acres..	12,182,991	6,889,334
Farm and ranch ponds.....number..	135,550	97,260
Tree plantings.....acres..	692,867	302,578
Pasture and range seedings.....acres..	15,201,011	6,674,041
Stubble-mulch farming.....acres..	24,967,627	19,267,422
Diversions.....miles..	31,466	13,915
Farm drainage.....acres..	4,574,477	2,428,408
Shelterbelts and windbreak plantings.....number..	79,806	45,173

Conservation work outside of districts

A lot of work has been done by the Soil Conservation Service outside of districts, including the making of more than 114,000 other conservation plans. Cooperating with the Extension Service, our technicians drew up plans for 9,320 widely



scattered demonstration farms, as well as 105,000 other plans for demonstration areas and CCC camp areas, for erosion control on highways, and so on.

DISTRICTS PLAN FOR THE FUTURE

Most soil conservation districts have both short-time and long-time plans. Some erosion problems are so acute that they can't wait. Work on those critical areas must be done now to save some of the lands. In many localities they are the areas of first priority. Other problems can wait a few years without so much danger. So in most districts the supervisors try to start work first with those farms which need it most.

Each district has a *work program* that covers all of the jobs that need to be done. Each district also has a *work plan* that shows *how* each job is to be done. The first step is to have the Soil Conservation Service make a conservation survey, which shows land conditions. From this are determined the capability of the land and what needs to be done. Then the supervisors make their district work program, and then their general work plan for the district. After that, a conservation farm plan must be made in full detail for each farm. This is done by Soil Conservation Service technicians.

While work on individual farms is going ahead, however, long-time plans are developed for the whole district. Such plans show what is needed to protect all the farmlands in the district. For example, they show things like these:

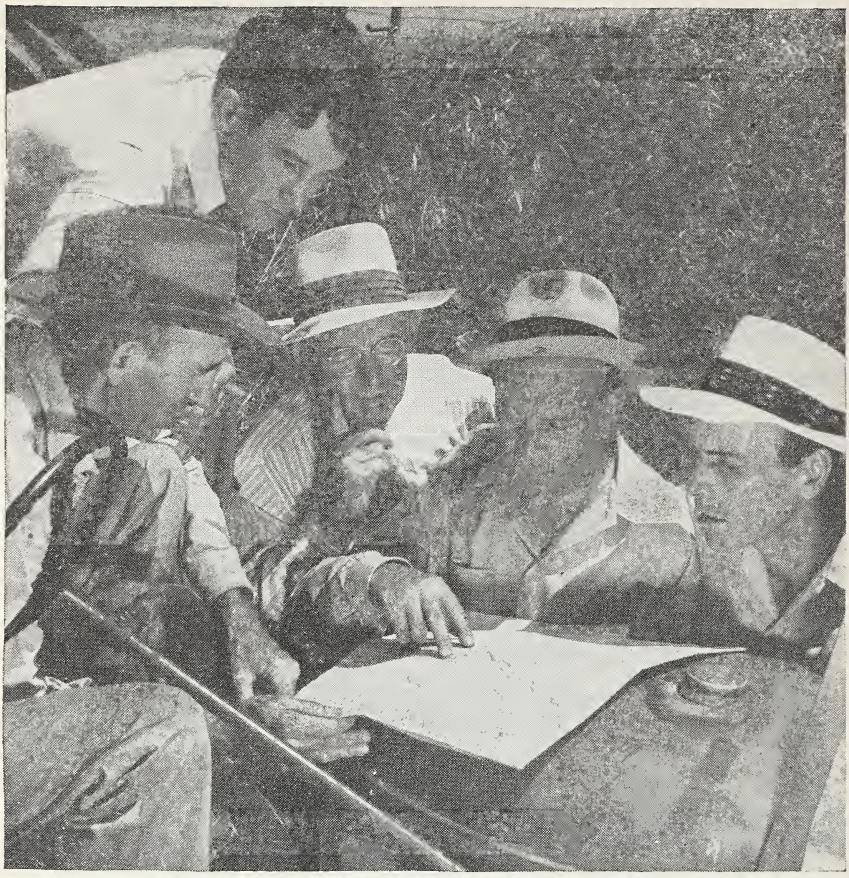
How much land of various kinds is in the district; what lands should be retired from cultivation; how much should be planted to grass, trees, or other permanent vegetation; what lands should be brought into cultivation; where and in what amount the livestock or cash crops should be increased or decreased; how many miles of terraces are to be built; amount of land to be drained; the number of ponds to be built.

Then the district supervisors, with technical assistance, can work out how much horsepower, tractor power, and manpower it will take to do the job.

The long-time plans are based on the land condition survey, and show what machinery, seeds, planting stock, lime, fertilizer, and other materials, as well as technical aid will be needed to finish the job. They are the *blueprints for the future.*

Long-time planning of one soil conservation district

The Broad River Soil Conservation District, including eight Georgia counties in the Piedmont hill section, found among other things that much land which was beng farmed there was not suitable for cropping. It also found 150,000 acres of idle land in the district. Some of this idle land was suitable for crops; most of the rest was good for pasture, meadow, and woodland. The district's



program now calls for changes in the use of this misfit and idle land. Here are some of the land use changes the supervisors of the Broad River District plan to make:

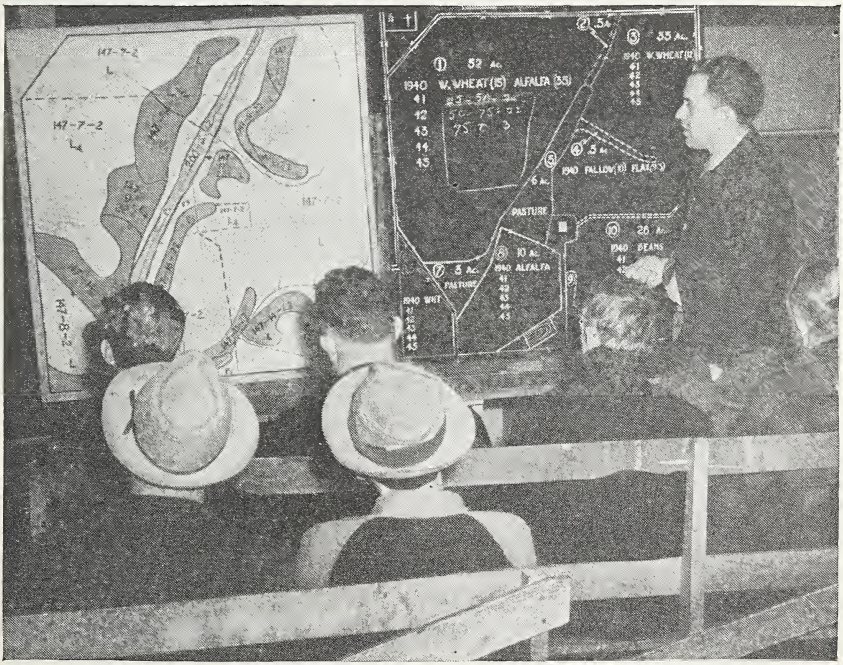
	Acres
Cultivated land at time of planning	473,502
Land recommended for continued cultivation	369,333
Land to be taken out of cultivation	104,169
Recommended for kudzu and sericea lespedeza	47,350
Recommended for permanent pasture	52,085
Recommended for woodland	2,367
Recommended for wildlife areas	2,367
Idle land at time of planning	150,000
Recommended for cultivation	30,000
Recommended for kudzu and sericea lespedeza	67,500
Recommended for permanent pasture	24,000
Recommended for woodland	24,000
Recommended for wildlife areas	4,500

When these changes have been made, there will be 75,000 acres less cultivated land in the Broad River District, but the district will have 217,000 acres more pasture, woodland, and meadow. The land left in crops will be the best land and with conservation farming it will produce more per acre. This will be partly because it is the best land, and partly because it is used properly.

Detailed farm plans

The Broad River District had completed plans on 4,125 farms by December 1947. These farms make up about 33 percent of the total land area of the district. The figures below show some of the changes in land use that are being made on these 4,125 farms:

Land use	Before planning	After planning	Change
	Acres	*Acres*	*Acres*
Cultivated land	229,347	210,873	−18,474
Permanent hay	2,555	44,666	+42,111
Pasture or range	44,720	75,171	+30,451
Woodland	141,398	155,187	+13,789
Idle land	42,430	0	−42,430



These farms are losing 18,474 acres of cultivated land. But they are gaining 86,000 acres of permanent hay, pasture, and woodland. Every acre of idle land has been put to work. These are the kinds of land use changes that are being made in soil conservation districts throughout the country. They are changes that eliminate misfits and put the land to those uses for which it is suited.

The supervisors of the Broad River District also have figured out what equipment, materials, and labor are needed to carry out the plans. Here are their figures for four big jobs:

The Job	*Needed:*
Terracing, 360,000 acres	360,000 horse-hours 972,000 motor-hours 3,132,000 man-hours
Pasture improvement, 228,000 acres	4,962,650 horse-hours 3,360,000 man-hours 6,740,000 pounds of seed 228,000 tons of lime 57,000 tons of superphosphate
Stock-water and fish ponds, 1,200 ponds	30,000 horse-hours 30,000 tractor-hours 180,000 man-hours 60,000 feet of pipe 1,600,000 fish
Farm drainage, 8,000 acres	80,000 horse-hours 8,000 tractor-hours 412,000 man-hours 1,680,000 feet of tile 16,000 cubic yards of concrete

Farmers in 1,900 odd districts throughout the country—like those in Broad River—are going ahead with their day-to-day task of conserving the soil, but they are not fooled as to the size of the conservation program. They know there is a lot of work to do, but a highly encouraging thing is that this does not scare them. On the contrary, the challenge to save the soil or perish, plus the fact that they now know how, spurs them to action.

DISTRICTS ARE DOING THE SOIL CONSERVATION JOB EVERY DAY, WHILE PLANNING FOR THE FUTURE. The Soil Conservation Service is helping the districts in many ways, but chiefly with technical assistance.

LAND CLASSES

Simple land standards

At last, we have simple maps that are easy for a man to use in making his farm plans. They are called land capability maps, and are also known as conservation survey maps. These maps divide land into eight classes. The best class of land (Class I shown on these maps) can be cultivated safely with no special care except ordinary good farming methods. The poorest class (Class VIII) is not suitable for cultivation, grazing, or forestry, but may have some value for wildlife.

The Soil Conservation Service makes such a map of each farm before the farm plan is started. The map, serving as a base, shows how much land there is of each class and where it is. Here are descriptions of the eight land classes:

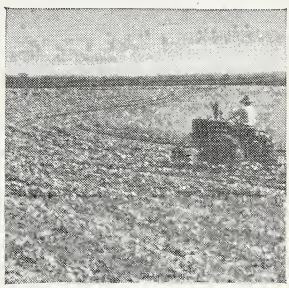
Land suited for cultivation

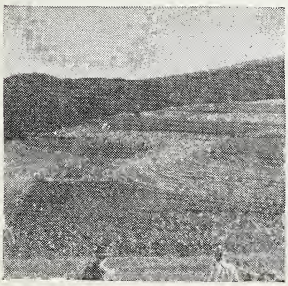
CLASS I.

Very good land that can be cultivated safely with ordinary good farming methods. It is nearly level and easily worked. Some areas need clearing, water management, or fertilization. Usually there is little or no erosion.

CLASS II.

Good land that can be cultivated safely with easily applied practices. These include such measures as contouring, protective cover crops, and simple water-management operations. Common requirements are rotations and fertilization. Moderate erosion is common.





CLASS III.

Moderately good land that can be cultivated safely with such intensive treatments as terracing and strip cropping. Water management is often required on flat areas. Common requirements are crop rotation, cover crops, and fertilization. Usually it is subject to moderate to severe erosion.

Land suited for limited cultivation

CLASS IV.

Fairly good land that is best suited to pasture and hay but can be cultivated occasionally—usually not for more than 1 year in 6. In some areas, especially those of low rainfall, selected land may be cultivated more than 1 year if adequately protected. When plowed, careful erosion prevention practices must be used.

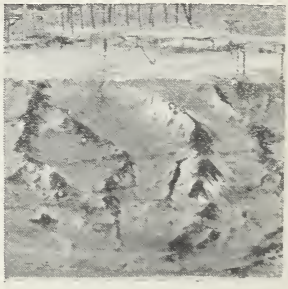
Land not suited for cultivation

CLASS V.

Land suited for grazing or forestry with slight or no limitations. It is nearly level and usually there is little or no erosion. It is too wet or stony or is otherwise not suited to cultivation. This land needs only good management.

CLASS VI.

Land suited for grazing or forestry with minor limitations. It is too steep, eroded, shallow, wet, or dry for cultivation. This land needs careful management.



CLASS VII.

Land suited for grazing or forestry with major limitations. It needs extreme care to prevent erosion or other damage. Usually it is too steep, rough, shallow, or dry to be seeded to range or pasture plants.

CLASS VIII.

Land suited only for wildlife or recreation. It is usually extremely steep, rough, stony, sandy, wet, or severely eroded.

MAKING A CONSERVATION FARM PLAN

How farmers and soil conservationists work together

The first thing they do is look over the farm. They walk together from field to field, studying each patch and parcel of land as they go, and checking with the land capability map. They see what each field is used for, and what the map says it should be used for. They also examine the pastures and woods.

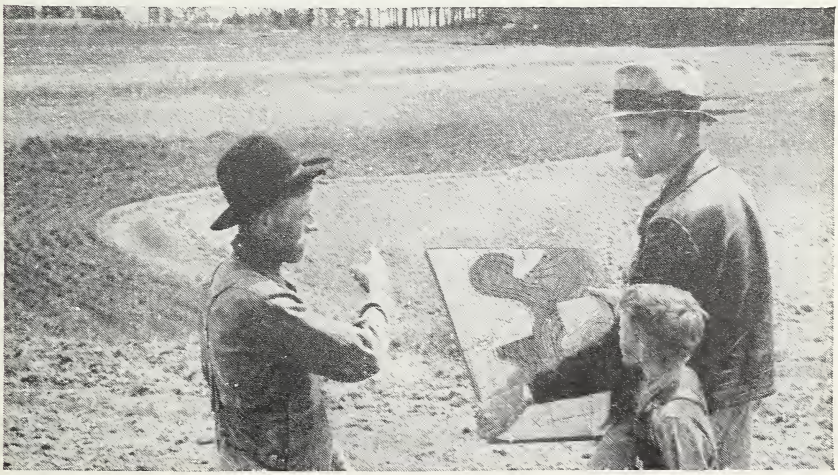
The farmer tells the technician what he grows, what kind of farming he wants to do, what livestock he has, and what machinery he has, and so on. The technician points out in every field, pasture, and woodlot, what needs to be done to stop erosion and keep the land productive.

Fences and farm roads may need to be moved in some places so that they follow the contours of the land and fit in with terraces and contour farming. Field boundaries will have to be changed in some places so that each field will have land of mainly one class. Some cropland—the less favorable usually—may have to be changed to pasture, meadow, or woods. There may be some idle land that can be irrigated, drained, or cleared of brush or trees to prepare it for growing crops.

The land that is to be used for growing "cash crops" is selected. Then the land needed for growing feed for the livestock is selected. Crop rotations are worked out for these fields. All of this land will usually come from Classes I, II, and III.

If there is any Class IV land on the farm, it will generally be used for permanent meadow or hay. The land for pasture or woodlots will come from Classes V, VI, and VII, if there is any land of these classes on the farm.

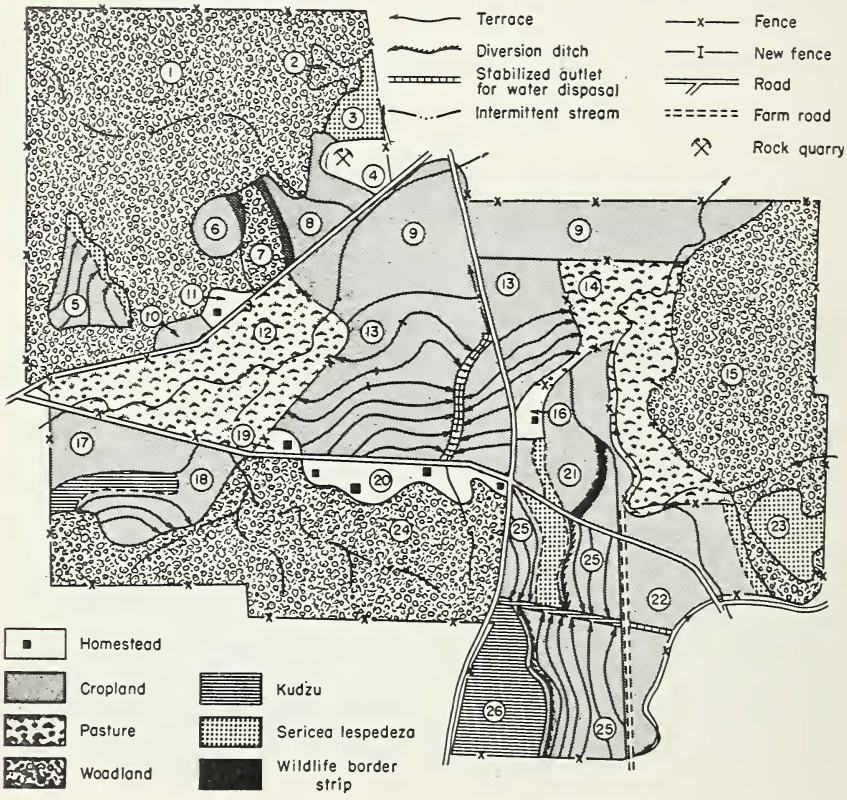
The farmer and technician agree on the erosion control practices to use on each field, and list them for the year ahead. Terraces may be needed on some



fields. Contour tillage and strip cropping may do the job on others. Cover or green-manure crops or stubble mulch may be needed on some fields. Some pastures may need contour furrows or a water-spreading system. If ponds are needed, the sites for them have to be chosen. If the farm is in a region where rainfall is heavy, one of the most important jobs is to plan waterways to carry off excess water. The sites for waterways must be chosen and plans made to keep them from gullying, and other practices must be carefully considered and decided on.

When the details are agreed upon, they are put down in a written plan, which includes a simple farm map. This plan, known as a cooperative agreement, is signed by the farmer and the district supervisors. The farmer then is ready to install the conservation practices with the help of the soil conservation district and Soil Conservation Service technicians.

This method of working out conservation farm plans according to the capacity and needs of the land is the only practical way to get the right kind of program on the land. Farmers like this cooperative method; they understand it. They are the final judges as to what is to be done on their land.



One of the big advantages of this kind of planning is that it is done out on the land, where the problems are. Each piece of land is carefully studied, and then the farm as a whole is studied. This is scientific planning for sound land use and effective land protection.

As a result, THESE CONSERVATION FARMING PLANS FIT THE LAND, FIT THE FARM, AND SUIT THE FARMER.

THE JOB AHEAD

Conservation needs for the United States

The Soil Conservation Service has made a State-by-State survey to see how much conservation work remains to be done to control erosion and conserve rainfall. It shows that, in spite of the work already done, a vast job still lies ahead.

Table 1, below, shows part of what the soil conservation job is:

TABLE 1—*Important items of soil conservation work*

The job	Amount yet to be done	Labor needed	Tractor-drawn equipment needed	Horse-drawn equipment needed
	Acres	*Man-years*	*Equipment-years*	*Equipment-years*
Contour planting	124,694,000	10,253	.....	.....
Use of cover crops	34,120,000	18,369	2,049	9,241
Use of crop rotations	212,780,000	6,558	2,194	2,188
Strip cropping	96,465,000	29,255	932	3,762
Terracing	90,658,000	277,496	69,334	139,278
Liming pastures	84,448,000	24,854	808	23,786
Mowing pastures	111,272,000	27,603	12,102	38,225
Stock-water development (number)	1,202,000	81,358	16,123	17,370
Shelterbelts and windbreaks	2,260,000	24,190	2,025	3,010
Stream-bank management	831,000	11,358	1,129	204
Tree planting in gullies and on critically eroding fields	11,655,000	145,244	10,467	999
Protected outlets for disposal of controlled water (as that from ends of terraces)	6,291,000	131,253	27,562	58,580

What the land is good for

The conservation needs survey also shows what our farmlands are best fitted for. There are about 1,142,000,000 acres of farm land in the United States. About 40 percent of this area is suitable for cultivation. About 80 percent of that arable area will require protection. Around 55 percent is best suited to grazing and woodland use. The remainder for the most part is in roads and farmsteads.

When all needed shifts in land use are made, and the land is adequately safeguarded, we will have in the United States a total of about 460 million acres of good cropland suitable and safe for producing our food and fiber crops.

THIS LAND MUST BE PROTECTED!

PRINCIPAL CONSERVATION PRACTICES

Here are explanations of the major conservation farming measures.

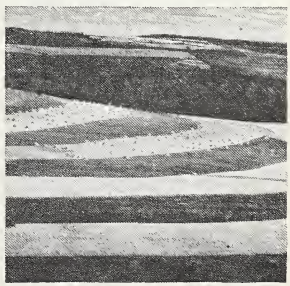
Contouring—Plowing, planting, cultivating, and harvesting sloping fields on the level; that is, farming on the contour, around hillsides with curving furrows to fit the lay of the land, instead of straight furrows up-and-down hill. The curved furrows catch rainfall and allow much of it to soak into the ground. This conserves water and reduces the amount of soil that is washed away. Part of the water that soaks into the soil is used later by crops. Another part is added to the underground water supply to feed springs, wells, streams, and ponds.

Contour furrowing—Plowing furrrows on the level to hold rainfall so it can help the growth of pasture and range grasses.

Contour subsoiling—Breaking up hard subsoil so it can absorb more rainfall. This is done mostly on grazing lands to improve the grass stand. Equipment "subsoilers" or "knives" are used for this work. The machines follow contours, spaced at intervals according to land and cover. This practice gives best results when the subsoil is dry and brittle enough to shatter when the subsoiler passes through it.

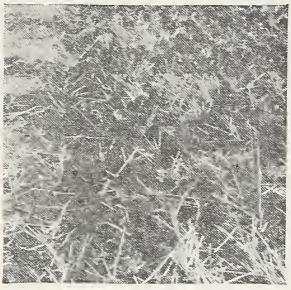
Terracing—Ridging land on or nearly on the contour. The farmer builds up low barriers—ridges or embankments—of soil across sloping fields to intercept rainfall. Terraces with slight grade slow down run-off water, guiding it to safe disposal at the sides of the fields. This controlled excess water runs off too slowly to cause erosion. Level terraces, suited to dry country, hold all the rainfall on the land.

Diversion channels—Channels with a ridge on the lower side. The ridges sometimes are larger than field terrace ridges and are farther apart. Otherwise they are much the same. They are built across slopes to divert damaging or wasteful run-off. They are used to check erosion much the same as terraces.



Strip cropping—Planting strips of close-growing plants—like grass or clover—between alternate strips of clean-tilled row crops, on or nearly on the contour. The strips of close-growing plants hold water and keep it from eroding the cultivated

strip below. They also catch soil picked up by water from the plowed strips above, straining it out of the run-off. *Wind stripping* is planting alternate strips of clean-tilled and thick crops at right angles to the prevailing wind. *Field stripping* is planting alternate strips of cultivated and thick crops roughly at right angles to the main slope of the land.

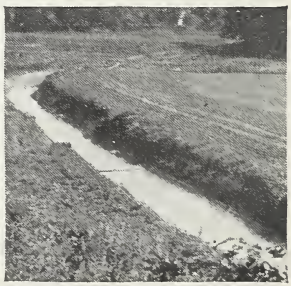


Stubble mulching or mulching—This practice is also called "trashy cultivation" and subsurface tillage. It means leaving crop residues and soil-improving crops on the ground instead of turning them under with plows or burning them. These materials include grain stubble, straw, cornstalks, crotolaria, lespedeza, and other protective crops. Mulching protects the soil from erosion and baking, cuts down erosion and evaporation, helps the soil to soak up more rainfall, and aids growth of useful bacteria in the soil. The practice requires implements that do not turn the soil upside down.

Crop rotation—Alternating production of various crops on a piece of land, to keep the soil productive and improve it. In a good rotation, one crop, or series of crops, helps the next crop. For example, nitrogen—needed for plant growth—is added to the soil by legumes, such as clover, alfalfa, and cowpeas. These plants have the power to take nitrogen out of the air and through their roots store it in the soil. After they have rotted, the nitrogen can be used for growth by plants that do not have the power to fix nitrogen, such as corn, cotton, and potatoes. Rotations often are used with strip cropping by shifting the close-growing strips and the tilled strips at fixed periods. In this way the soil is improved by the same cropping system used to stop erosion.

Cover crops—Dense crops that prevent erosion of cultivated areas at times when there are few or no other plants to protect the land from wind and water erosion. There are summer covers, winter covers, and permanent covers. Legumes are widely used as cover crops.

Fertilizing land—Use of manure or fertilizer on land that needs additional plant food to stimulate plant growth.



Drainage—Removal of excess water from wet land by ditches or by tile drains. Such artificial waterways must be kept free of silt by protecting the watershed from erosion. Open ditches must be kept free of plant growth and debris that stop drainage.

Irrigation—Spreading water, brought to the site by canals and ditches, on land to help the growth of crops. Applying water with sprinkler systems is known as "overhead irrigation."

Water spreading—Controlled spreading of run-off water from the foot of slopes and from gullies and washes over nearby land that needs it. This is done by dikes, dams, and other means for directing water from one place to another. The object is to make use of all water in low rainfall areas, rather than waste it.

Irrigation development and improvement—This covers management of water for irrigation. It includes building and improving water distribution systems on farms; land preparation, such as leveling and contouring; measurement and control of water; development or improvement of springs and wells; and disposal of waste water.

Protection of water-disposal outlets—Protected channels and outlets carry off excess water from terraces and near-contour crop rows. These waterways are stabilized against erosion by grasses, legumes, and vines. They include meadow strips, grassed ditches and diversion ditches, and grassed areas at the ends of field terraces.

Pasture development—Developing new pastures with selected grasses and legumes, and combinations of grasses and legumes. It includes fertilization, liming, drainage, irrigation, fencing for grazing control, and other measures.

Pasture improvement—Using measures that increase growth and improve quality of forage grasses. It includes such measures as rotation grazing according to carrying capacity; stock-water ponds placed to encourage even grazing; spacing of salt and bedding grounds for the same purpose; reseeding; liming and fertilizing; basin listing and contour furrowing; water spreading; weed control; and fire protection.

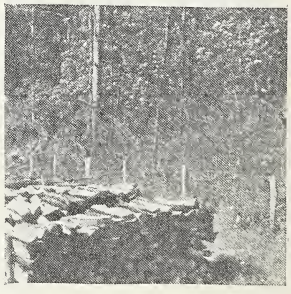
Green manuring—Turning under grain, legume, or grass crops while green, or soon after they mature. This is done to improve the soil by adding to the supply of organic matter.

Perennial hay production—Using land not suitable for cultivation to grow hay. The land should not be plowed as a rule, except to renew planting. This is different from temporary plantings of perennials like timothy and alfalfa on land used for cultivation, as is often done in crop rotations.

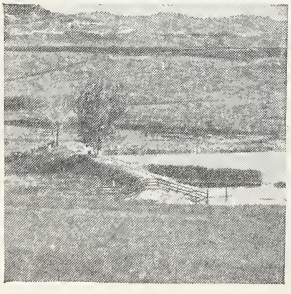
Gully control—Using plants and mechanical measures to stop eroding gullies. These measures reduce the rate of water flow within gullies or by diverting water away from heads and sides of gullies. It is done by using: (1) Grass, vines, trees, and shrubs; (2) flumes and other devices to lessen the cutting power of waterfalls; and (3) dams for catching silt.

Field and gully planting—Planting eroded or erodible land, which is unsuitable for cultivation, to trees, shrubs, grasses, vines, or other useful plants that will help stop erosion and conserve rainfall.

Woodland harvesting—Cutting for lumber, pulp, and other uses, according to sound forestry practices. Such cutting helps sustain yields and promotes rapid growth. Also to salvage dead or damaged trees.



Improvement cuttings—Cutting woodland mainly to encourage growth. It is also done to increase the utility of the forest for other uses than wood production, such as watershed protection.



Pond management—Use of suitable measures to protect ponds from erosion and siltation and aid production of fish and other pond wildlife.

Shelterbelts; windbreaks—Plantings of trees and shrubs in strips or "belts," usually one to ten rows wide. The main purpose is to deflect wind currents, thereby reducing wind erosion and snow drifting. Such strips of trees and shrubs also conserve rainfall, and protect fields, gardens, livestock, orchards, and buildings.

Management of odd areas—This means development of odd portions of farms and ranches, such as fence corners, rocky areas, and sinkholes for wildlife purposes. It includes use of plants suitable for that purpose.

Meanings of some conservation terms

Sound land use—Using every acre according to its capacity, with methods that maintain productiveness. Such use is based on factors of: (1) Soil, slope, kind and extent of erosion, and liability to erosion; (2) climate; and (3) economic problems. Good land use puts all land to work, instead of permitting some of it to lie idle. It means the safe use of land for useful and suitable crops.

Carrying capacity—The amount of livestock an area of pasture or range will feed through a grazing season, under average conditions, without permanent damage to land or grass. Grazing capacity is determined by range surveys.

Grazing season—Part of year animals can be profitably grazed without permanent damage to land or grass.

Farm conservation plan—Plan for use of all land on a farm according to its needs and capacity, and the farmer's desires and facilities.

Soil-saving dams—These are dams, built of earth, rock, or other local materials, across gullies or natural watercourses to catch silt, slow down runoff, and reduce erosion.

Runoff—Part of rainfall (including melted snow) not absorbed by the soil or not lost by evaporation—that is, the part that runs off the land into neighboring drainageways.

Technicians—Technically trained men who assist with the soil conservation job of treating all the land of farms according to capacity to produce and according to needs. To do a complete job of this kind requires the joint (properly coordinated) contribution of land specialists, agronomists (crop specialists), foresters, engineers, wildlife specialists, and whatever other specialists may be needed to carry out the complete farm job.

Exhaustion of plant food—Excessive removal of plant nutrients (plant food constituents) in the soil in the agricultural products taken off the land.

Permanent pasture—Areas used continuously for pasture (for grazing) or meadow (for hay).

THE DEMAND FOR CONSERVATION

The farmers of the United States in growing numbers are asking for help in putting conservation on their land—mainly technical help. Ten years ago, when conservation farming was new, few knew about it; today hundreds of thousands realize its value and want it. The thousands and thousands of requests on hand show that American farmers understand fully the importance of conserving their own and the Nation's soil and water resources.

Farmer applications for assistance

By December 31, 1947, 850,518 farmers had applied for farm plans through the 1,855 soil conservation districts then operating. This does not include the large number of requests from groups of farmers. In 1945, 118,878 individual requests were received from farmers for conservation plans for 33 million acres. In 1946, 172,520 farmers, operating more than 45 million acres, asked for such plans. At the same time the number of groups asking for help was steadily increasing.

In addition, one or more practices were applied at the request of farmers on hundreds of thousands of farms not covered by farm plans.

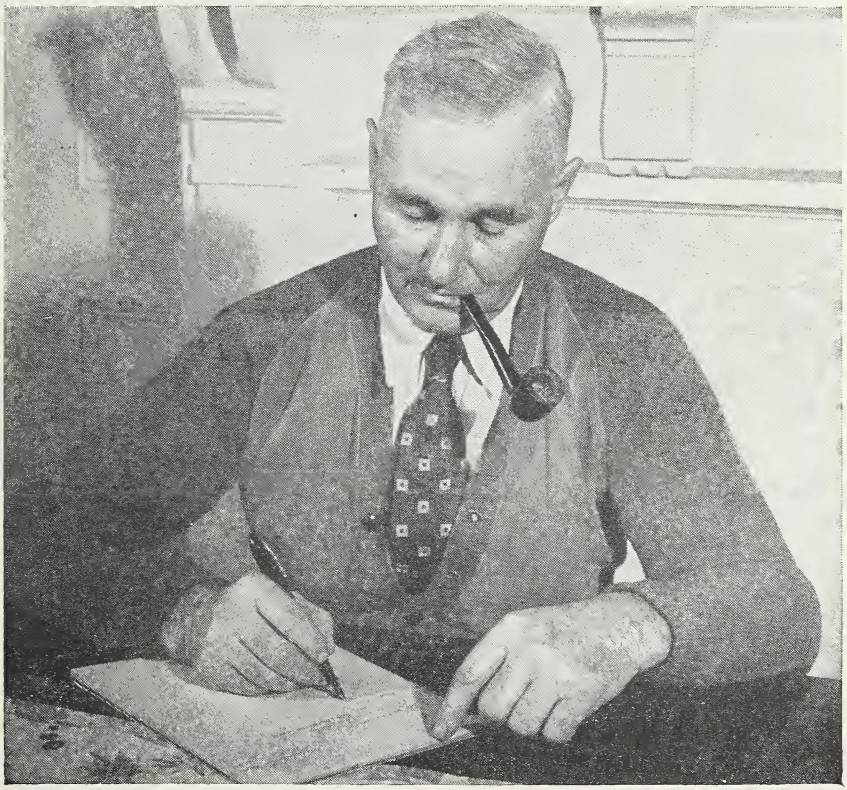
Filling the requests from farmers, of course, means that the districts in turn must get aid from the Soil Conservation Service or other agencies. The Service is now helping virtually all of the soil conservation districts in the country. This aid will be extended to all districts, and increased, as rapidly as possible.

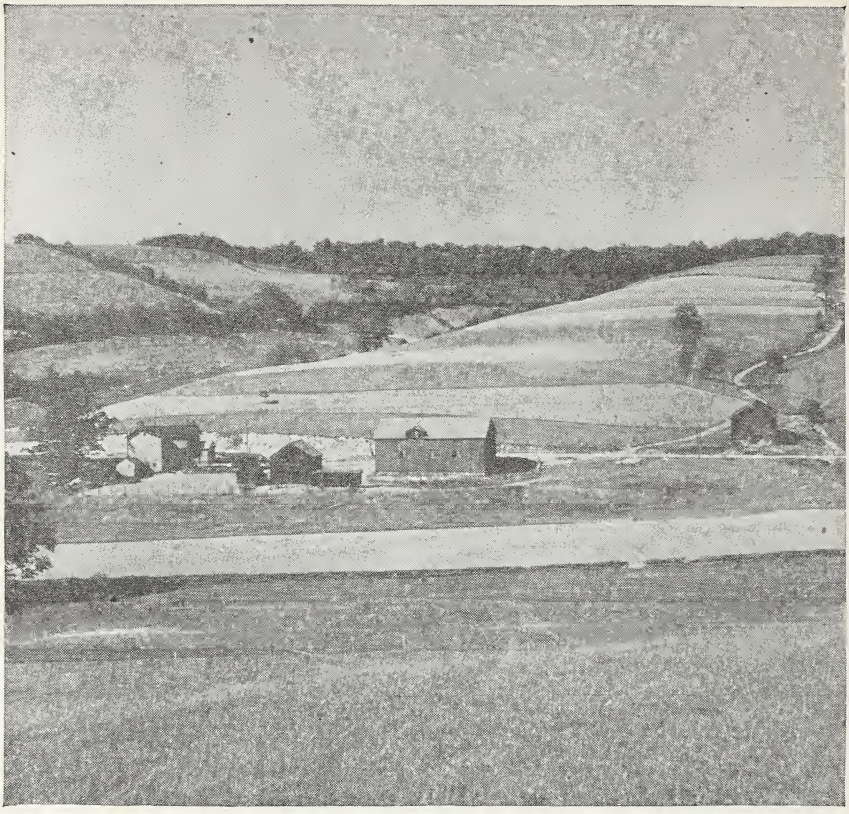
HERE'S WHAT THE FARMERS SAY

Throughout the United States, soil conservation work has brought real and material benefits. Farmers and ranchers who have received these benefits have agreed on their value. East, West, North, and South, they have voiced their approval of soil conservation methods and the resulting gains, in group meetings and in letters.

In 1943, more than 9,300 farmers, who operated 3,972,173 acres, reported on the benefits derived from soil conservation.

Of the 9,300 farmers who reported 8,931 said that their crop yields had been increased by the conservation farming methods they were using. They estimated that their average yield increase for the major crops grown throughout the country





was 35.7 percent. This means that every 3 acres farmed the conservation way was producing more than 4 acres farmed the old wasteful way.

Furthermore, 6,261 of these farmers reported that work on their farms had influenced 38,836 other farmers to start conservation farming. Furthermore, 3,628 of these district cooperators have actually helped 18,170 neighbors to plan and apply conservation work on their farms.

Here, in their own words, are what some of these thousands of farmers and ranchers have to say about the soil conservation program:

W. J. Waits, of Pickens, Miss., Holmes County Soil Conservation District, in 1937, grew 80 bales of cotton on 250 acres. In 1944, he said, he "produced 45 more bales . . . on 75 acres less land," and made a "total increased income of $17,200."

Frank Kalina, of Pawnee City, Nebr., Turkey Creek Soil Conservation District, said he "about tripled" his income by conservation methods.

G. V. Carpenter, of Forest City, N. C., Broad River Soil Conservation District, wrote: "If the soil conservation people had not . . . advised me, I would have lost my farm."

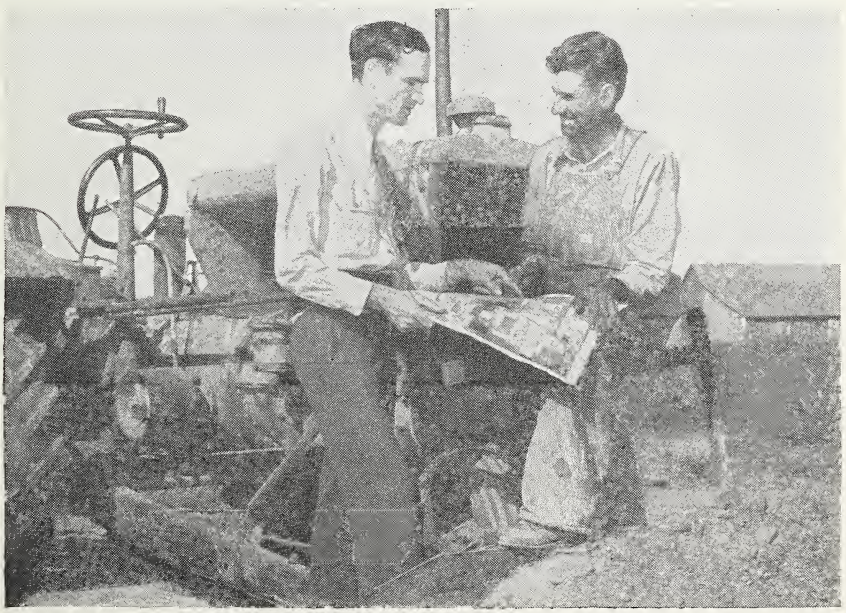
Carl Lindblad, of Wolsey, S. Dak., Carpenter County Soil Conservation District, reported: "My farm was so severely eroded by wind that it was impossible to carry on any farming operations . . . but with the help of the soil conservation people and equipment my farm has again been made productive."

D. J. Lay, of Westminster, S. C., Upper Savannah Soil Conservation District, writes that his lint cotton yields have increased 275 pounds per acre as a result of conservation. He reports other increases, and adds that in one year his benefits from increased production amounted to $6,113.

Ralph E. Kamper, of Freeburg, Ill., Shiloh-O'Fallon Soil Conservation District, reports that erosion has been stopped, and wheat production increased 7 bushels per acre by conservation, and adds: "These contour fields are much easier to work, as well as being easier on the equipment."

Donald Rook, of Grand Junction, Colo., Orchard Mesa Soil Conservation District: "Sugar beets on conservation-improved soil have given an average yield of 16 tons per acre in 1943 and 1944. On the same type of soil without the proper treatment, the average yield has been 8 tons."

W. H. King, of Smyrna, Tenn., Rutherford County Soil Conservation District: "Before I started conservation farming this farm produced approximately 25 bushels of corn per acre; now it produces 35 and 40 bushels. Cotton was 1,000 pounds an acre, now 1,500 pounds; wheat 10 bushels an acre, now 15 bushels. I have been able to increase my beef herd from 14 to 30 head."



A. B. Parker, Americus, Ga., Lower Chattahoochee River Soil Conservation District: "Before the soil conservation district program was put into effect on this farm, 13 tons of peanuts were produced, which was all the cash crops from this land. Last crop year, from the same land, we sold 51 tons of peanuts, 5 tons of blue lupine, 6 tons of crotalaria, and 1,000 bushels of wheat. We paid $11,200 for this farm and it is our belief on a conservative estimate we could sell this farm now for $22,400."

Harry V. Burens, Englishtown, N. J., Freehold Soil Conservation District: ". . . an annual yield increase of about 30 percent . . . erosion on sloping ground was controlled 100 percent."

J. W. Whittenton, Forrest City, Ark., South Crowley Ridge Soil Conservation District: "In 1935 . . . I had no fences, very few work stock, and no tractor, and had to buy feed most every year. In 1937, the Soil Conservation Service started me to farming my land like it should be farmed . . . now I have plenty of work stock, 3 tractors, and other tools all paid for . . . my gross income in 1936 was $7,000 and in 1944 my gross income increased to $18,500, and I still have feed and seed to sell."

Hugh Darnell, Porter, Okla., Arkansas-Verdigris Soil Conservation District: "When I bought the farm in 1939 . . . the total cash from crops was . . . $861.00 (for one year). During the 6 years I have followed my conservation plan the productive value of my land has increased from $20.00 per acre to $45.00 per acre. My total cash income from the farm in 1944 was . . . $5,802.82."

L. L. McAlister, Greensboro, N. C., Haw River Soil Conservation District: "In 1940 my farm was not making a dime of profit and hadn't made a profit for several years. That fall I started following recommendations of the Soil Conservation Service. Crop yields increased. Lost motion was reduced . . . Per acre cost of production went down. An actual profit was realized in 2 years' time. Details of how would be too long to recite. On the next farm the combination would be different anyway. The important thing is that I began to make money instead of losing money . . . Upon inquiry at your local office, I found that the total cost of helping me plan and carry out a conservation system was approximately $135 . . . The Government invested $135 in me and the land I farm. So far I have paid into the United States Treasury a total of $2,511.98 on account of income the farm produced. I will pay about $1,000 more this year. I can't see into the future, but my production cost is low enough so that I can reasonably expect to pay *something* every year."

For sale by the Superintendent of Documents, U. S. Government Printing Office
Washington 25, D. C. – Price 10 cents

Issued May 1946
Slightly revised April 1948

U. S. GOVERNMENT PRINTING OFFICE: 1948